

Aseptic Plant Culture System (APCS), Phase II

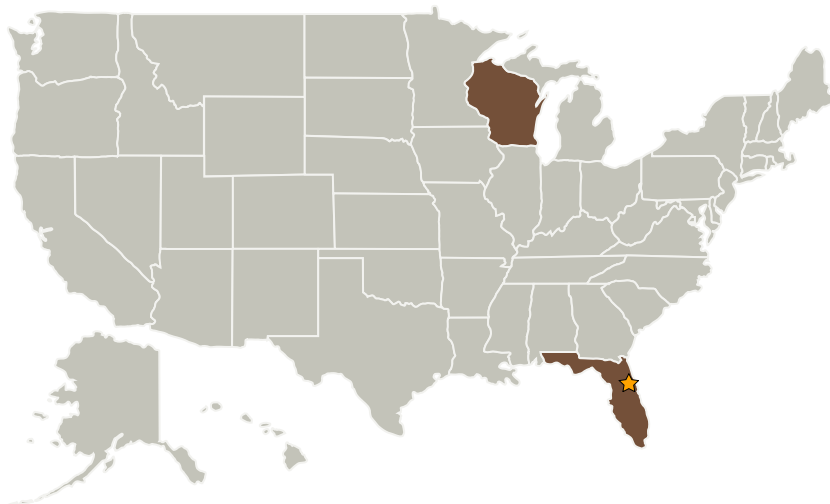
Completed Technology Project (2005 - 2007)



Project Introduction

Aseptic plant culture plays a significant role in biotechnology and plant physiology research, and in vegetative propagation of many plant species. The development of an Aseptic Plant Culture System would provide a mechanism for experimentation as well as for transporting and storing vegetatively propagated plant material in space. Most culture systems are passive, with no environmental monitoring or control. This project proposes to develop an environmental control and monitoring system for sterile culture that can accommodate, without modification, a variety of standard culture vessels. The system would consist of a modular base unit into which culture vessels can be plugged as desired. Multiple vessel sizes and shapes could be accommodated with a generic connector system. Environmental parameters controlled and monitored would include light level and spectral quality, photoperiod, air and media temperature, humidity, and atmospheric composition. Using innovative, high precision miniature environmental control components allows each vessel to maintain independent control setpoints if desired. Subsystem modularity means the system can be reconfigured for use in specific carriers or to meet an investigator's specific need. Particular challenges include development of a miniaturized humidity control system, precise control of the gaseous environment in small volumes, and maintaining sterility for extended periods.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

Primary U.S. Work Locations

Florida	Wisconsin
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.3 Human Health and Performance
 - └ TX06.3.5 Food Production, Processing, and Preservation